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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,269

04/10/2007

Haoyi Wan

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12/15/2008

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ALEXANDRIA, VA 22314

EXAMINER

NICKERSON, JEFFREY L

ART UNIT

PAPER NUMBER

2442

NOTIFICATION DATE

DELIVERY MODE

12/15/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/584,269	<b>Applicant(s)</b> WAN ET AL.	
	<b>Examiner</b> JEFFREY NICKERSON	<b>Art Unit</b> 2442	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This communication is in response to Application No. 10/584,269 filed nationally on 10 April 2007 and internationally on 24 December 2004. The request for continued examination presented on 19 November 2008, provides change to claims 1-3 and 5-6, the specification, and abstract, is hereby acknowledged. Claims 1-6 have been examined.

#### ***Specification***

2. The RCE presented on 19 November 2008 providing change to the title and abstract is noted. All prior objections to the specification are hereby withdrawn.

#### ***Claim Rejections - 35 USC § 112***

3. The RCE presented on 19 November 2008 is noted. Applicant's arguments regarding rejections under 35 USC 112, 1st paragraph, are persuasive. All prior rejections under 35 USC 112, 1st paragraph, are hereby withdrawn.

#### ***Response to Arguments***

4. Applicant's arguments, filed 19 November 2008, regarding rejections of claims 1-6 under 35 USC 102 and 103 as anticipated or obvious in view of Liu et al ("AOTO..."), and Traversat et al (US 2002/0147771 A1) are persuasive. However, new rejections may appear below.

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Independent claims 1 and 6

Applicant argues Liu does not teach several limitations as amended into these claims. Specifically applicant argues Liu does not teach a weighted metric value calculated according to number of adjacent nodes to the one node.

These arguments are persuasive and, therefore, the rejections of these claims are hereby withdrawn.

Dependent claims 2-5

Applicant argues these claims conditionally on the arguments of their parent independent claims.

Applicant arguments are persuasive and, therefore, the rejections of these claims are hereby withdrawn.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al ("AOTO: Adaptive Overlay Topology Optimization in Unstructured P2p

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Systems", 04 December 2003), and in further view of Chatterjee et al ("A Weight Based Distributed Clustering Algorithm for Mobile ad hoc Networks" 2000).

Regarding claim 1, Liu teaches a node device which newly joins a network formed by a plurality of existing nodes (Liu: pg 4187, Figure 2), the node device comprising:

a virtual connection establisher unit configured to establish a plurality of virtual connections, each virtual connection being between the node device and one of the plurality of existing nodes (Liu: pg 4186, section I, paragraphs 3-4 provides a newly connecting node goes out and identifies which nodes are its neighbors);

a metric value calculator unit configured to calculate a metric value through each of the virtual connections, the metric value corresponding to a plurality of routes to one node of the plurality of existing nodes via one of the virtual connections (Liu: pgs 4187-4188, section II, subsection B, all paragraphs specify that a new node identifies its neighbors and builds a cost table for logical neighbors);

a total metric value calculator unit configured to calculate a total metric value corresponding to the metric values calculated for each of the virtual connections (Liu: pgs 4187, section II, subsection A provides for summing costs along a virtual connection; subsection B provides for determining total costs by exchanging cost tables with neighbors);

a connection establisher unit configured to establish a connection with an existing node of the plurality of existing nodes corresponding to the virtual connection having a smallest metric value (Liu: pg 4187-4188, section II, subsection B, paragraph 3

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specifies the node only floods a message to the nodes with least cost, i.e. not non-flooding neighbors); and

wherein a node characteristic is the number of adjacent nodes (Liu: pg 4188, section III, paragraph 1 specifies node degree is a common characteristics used in topology analysis; See also pg 4189, section III, subsection B, paragraph 3).

Liu does not teach wherein the metric value is a weighted metric value being weighted according to a node characteristic of the one node.

Chatterjee, in a similar field of endeavor, teaches wherein the metric value is a weighted metric value being weighted according to a node characteristic of the one node (Chatterjee: abstract; pg 515, section 3.2, all subsections, but specifically step 6; See also section 3.3., paragraph 3 for definition of variables, which of themselves are weighted, for determining the combined weight).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Chatterjee for weighting a metric based on node characteristics. The teachings of Chatterjee, when implemented in the Liu system, will allow one of ordinary skill in the art to weight preferred node characteristics in the cost determination scheme. One of ordinary skill in the art would be motivated to utilize the teachings of Chatterjee in the Liu system in order to give some node characteristics more importance than others when determining the metric.

Regarding claim 2, the Liu/Chatterjee system teaches further comprising:

an acquirer unit configured to acquire, from any of the plurality of existing nodes, a node-to-node connection information of an adjacent node to any other of the plurality of existing nodes forming the network (Liu: pgs 4187-4188, section II, subsection B, paragraph 1 specifies the node exchanges a neighboring cost table with each of its logical neighbors); and

wherein the weighted metric value calculator unit is configured to calculate the weighted metric value in accordance with the node-to-node connection information (Liu: pgs 4187-4188, section II, subsection B, paragraph 2 specifies exchanged neighboring cost tables are incorporated into the algorithm for building the spanning tree , i.e. its message flooding strategy).

Regarding claim 3, the Liu/Chatterjee system teaches

wherein the node-to-node connection information includes a node ID (node number) for identifying the adjacent node, a metric value (cost) of a route between each of the plurality of existing nodes and the adjacent node, and a number of the nodes adjacent to the adjacent node (Liu: pgs 4187-4188, section II, subsection B, all paragraphs specifies that cost tables maintain a cost between itself and all logical peers and that these tables are exchanged between immediately adjacent neighbors; therefore the received exchanged table inherently contains an entry for every logical node adjacent to the immediate neighbor, therefore the exchanged cost table contains the number of nodes adjacent to the adjacent node; pg 4187, section II, subsection C, all paragraphs specify a minimizing algorithm that determines optimal flooding routes

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which inherently must contain some type of node identifier so that the node knows which nodes are which, and in the pseudo code Liu uses an integer node number).

Regarding claim 4, the Liu/Chatterjee system teaches

wherein the metric value includes at least one of a number of hops, network bandwidth, communication costs, delay, load, MTU, or reliability (Liu: pgs 4187-4188, section II, subsection B, paragraph 1 specifies network delay is used for cost).

Regarding claim 6, this method claim comprises limitations corresponding to that of claim 1 and the same rationale of rejection is used, where applicable.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Liu et al ("AOTO: Adaptive Overlay Topology Optimization in Unstructured P2P Systems", 04 December 2003), in view of Chatterjee et al ("A Weight Based Distributed Clustering Algorithm for Mobile ad hoc Networks" 2000), and in further view of Traversat et al (US 2002/0147771 A1).

Regarding claim 5, the Liu/Chatterjee system teaches

wherein the acquirer unit is configured to notify, to each of the plurality of existing nodes, for the node-node connection information (Liu: pg 4187-4188, section II, subsection B, paragraph 2 specifies probing neighbors for cost information); and



wherein response information is node-node connection information (Liu: pg 4187-4188, section II, subsection B, paragraph 2 specifies probing neighbors for cost information); and

wherein requested information is a metric value (Liu: pg 4187-4188, section II, subsection B, paragraph 2).

Liu does not teach notifying a type of requested information or a combination of requested information to be included in the response information.

Traversat, in a similar field of endeavor, teaches notifying a type of requested information or a combination of requested information to be included in the response information (Traversat: [0350]-[0356] specifies that various peer information properties may be queried, such as uptime, credentials, etc).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Traversat for requesting characteristics from another peer in the decentralized network. The teachings of Traversat, when implemented in the Liu/Chatterjee system, will allow one of ordinary skill in the art to form greedy and dynamic cost tables by requesting information relevant to a node's own interests. One of ordinary skill in the art would be motivated to utilize the teachings of Traversat in the Liu/Chatterjee system in order to provide a more wholesome cost table, incorporating more variables into a cost equation and fleshing out its effectiveness.

***Cited Pertinent Prior Art***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Guyon et al ("An Introduction to Variable and Feature Selection", 2003), discloses how to select variables for a decision system by weighting them according to their importance.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEFFREY NICKERSON whose telephone number is (571)270-3631. The examiner can normally be reached on M-Th, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. N./  
Jeffrey Nickerson  
Examiner, Art Unit 2442

/Andrew Caldwell/  
Supervisory Patent Examiner, Art  
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